CLAIMS

1. A communication method in a system where wireless communications is carried out using multi antennas in both a transmission apparatus and a reception apparatus, comprising:

an estimation step of estimating a reception electric field strength of the entire system;

a calculation step of calculating an effective reception electric field strength that is a reception electric field strength usable in demodulation processing;

a control step of controlling a predetermined parameter based on the reception electric field strength of the entire system and the effective reception electric field strength; and

a transmission step of transmitting in the transmission apparatus a signal processed with the parameter determined.

2. The communication method according to claim 1, wherein a modulation scheme is controlled as control of the parameter in the control step, while a signal modulated with the modulation scheme determined is transmitted in the transmission step.

3. The communication method according to claim 1, wherein a transmission antenna is selected as control of the parameter in the control step, while a signal is transmitted from the transmission antenna selected, in the transmission step.

4. The communication method according to claim 1, wherein transmission power is controlled as control of the parameter

in the control step, while a signal amplified to the transmission power determined is transmitted in the transmission step.

5. The communication method according to claim 1, wherein a communication scheme is determined from either MIMO communications or space-time coding communications as control of the parameter in the control step, while a signal is transmitted in the communication scheme determined in the transmission step.

6. The communication method according to claim 1, wherein a coding method is controlled as control of the parameter in the control step, while a signal encoded in the coding method determined is transmitted in the transmission step.

7. The communication method according to claim 1, wherein antenna characteristics are controlled as control of the parameter in the control step, while a signal is transmitted in the antenna characteristics determined, in the transmission step.

8. The communication method according to claim 1, wherein in the calculation step, an eigenvalue corresponding to a channel matrix formed of channel estimation values is calculated, and the effective reception electric field strength is calculated based on the eigenvalue.

9. A communication method in a system where wireless communications is carried out using multi antennas in both a transmission apparatus and a reception apparatus, comprising:

an estimation step of estimating a reception electric field strength of the entire system;

a calculation step of calculating an effective reception electric field strength that is a reception electric field strength usable in demodulation processing;

a control step of controlling a predetermined parameter based on the reception electric field strength of the entire system and the effective reception electric field strength; and

a reception step of receiving in the reception apparatus a signal in the parameter determined.

10. The communication method according to claim 9, wherein a reception antenna is selected as control of the parameter in the control step, while a signal is received in the reception antenna selected, in the reception step.

11. The communication method according to claim 9, wherein antenna characteristics are controlled as control of the parameter in the control step, while a signal is received in the antenna characteristics determined, in the reception step.

12. The communication method according to claim 9, wherein in the calculation step, an eigenvalue corresponding to a channel matrix formed of channel estimation values is calculated, and the effective reception electric field strength is calculated based on the eigenvalue.

13. A transmission apparatus in a system where wireless communications is carried out using multi antennas in both

the transmission apparatus and a reception apparatus, comprising:

a controller that controls a predetermined parameter based on a reception electric field strength of the entire system and an effective reception electric field strength that is a reception electric field strength usable in demodulation processing; and

a transmitter that transmits a signal processed with the parameter controlled.

14. A reception apparatus in a system where wireless communications is carried out using multi antennas in both a transmission apparatus and the reception apparatus, comprising:

an electric field strength estimator that estimates a reception electric field strength of the entire system;

an effective electric field strength calculator that calculates an effective reception electric field strength that is a reception electric field strength usable in demodulation processing;

a frame configuring section which determines a predetermined parameter based on the reception electric field strength of the entire system and the effective reception electric field strength, and transmits information indicative of the parameter determined to the transmission apparatus; and

a receiver that receives a signal processed with the parameter determined in the transmission apparatus, using

the plurality of antennas.

15. A reception apparatus in a system where wireless communications is carried out using multi antennas in both a transmission apparatus and the reception apparatus, comprising:

an electric field strength estimator that estimates a reception electric field strength of the entire system;

an effective electric field strength calculator that calculates an effective reception electric field strength that is a reception electric field strength usable in demodulation processing;

a controller that controls a parameter based on the reception electric field strength of the entire system and the effective reception electric field strength; and

a receiver that receives a signal in the parameter controlled.

16. The reception apparatus according to claim 14, further comprising:

an eigenvalue calculator that calculates an eigenvalue corresponding to a channel matrix formed of channel estimation values,

wherein the effective electric field strength calculator calculates the effective reception electric field strength based on the eigenvalue.